

Higher Liver Stiffness Scores Linked to Liver Cancer in People With Hepatitis C or NAFLD

People with advanced fibrosis—not just cirrhosis—were at greater risk for hepatocellular carcinoma.

March 15, 2023 By Sukanya Charuchandra and [Liz Highleyman](#)

Advanced fibrosis, as measured by liver stiffness scores, is associated with a greater likelihood of liver cancer among people with chronic hepatitis C or fatty liver disease, according to findings published in [PLOS One](#).

Arising from the accumulation of fat in the liver, [non-alcoholic fatty liver diseases \(NAFLD\)](#) and its more severe form, non-alcoholic steatohepatitis (NASH), can lead to the buildup of scar tissue (fibrosis), cirrhosis and hepatocellular carcinoma, the most common type of [liver cancer](#). Chronic [hepatitis B virus \(HBV\)](#) and [hepatitis C virus \(HCV\)](#) infection can also cause fibrosis, cirrhosis and liver cancer.

Perica Davitkov, MD, of the Veterans Affairs Northeast Ohio Healthcare System in Cleveland, and colleagues assessed the prevalence of liver cancer among people with hepatitis C or NAFLD.

The research team accessed retrospective data from the Veterans Affairs Informatics and Computing Infrastructure. For their analyses, they included a nationally representative sample of people with hepatitis C or NAFLD who had liver imaging data available from 2015 through 2019. The study population consisted of 26,161 people with HCV and 13,629 people with NAFLD. The participants underwent transient elastography (FibroScan), an imaging technique used to estimate liver damage; higher liver stiffness scores indicate more advanced fibrosis.

As is typical of the U.S. veteran population, more than 90% of participants were men, and the median age was approximately 60 years. In the hepatitis C cohort, about 75% were white, and about 15% were Black. In the group with fatty liver disease, roughly half were white and half were Black. About 12% in the hepatitis C cohort and more than a quarter in the NAFLD cohort had a history of heavy alcohol use, which is also a risk factor for cirrhosis and liver cancer. During the study period, 496 people in the hepatitis C group and 42 people in the NAFLD group developed HCC.

Among people with hepatitis C, the incidence of hepatocellular carcinoma rose with liver stiffness scores; however, 119 people without advanced cirrhosis nonetheless developed liver cancer. After a follow-up period of 2.3 years, the incidence of liver cancer was 0.28 cases per 100 person-years for those with liver stiffness scores less than 9.5 kilopascals (kPa); 0.93 cases per 100 person-years for those with scores between 9.5 and 12.5 kPa; 1.28 cases for those with scores between 12.5 and 14.5 kPa; and 2.79 cases for those with scores above 14.5 kPa.

Looking at the effect of successful hepatitis C treatment that leads to a sustained virological response (SVR), or a functional cure, 35% of people with liver cancer achieved SVR at least one year before HCC diagnosis, 37% were diagnosed within a year after achieving SVR and 28% were never cured. Among the 119 people without advanced fibrosis who developed liver cancer, 47 had achieved SVR a year or more prior to HCC diagnosis, while 69 were diagnosed within a year after SVR (suggesting they may already have had liver cancer at the time of treatment) or were never cured. The incidence of HCC was 0.117 cases per 100 person-years among people who achieved SVR compared with 0.171 cases among those who were not cured.

Liver cancer incidence also rose with higher liver stiffness scores among people with NAFLD. After a follow-up period of 1.1 years, the incidence of liver cancer in people with NAFLD was 0.04, 0.20, 0.58 and 1.02 cases per 100 person-years for those with liver stiffness scores less than 9.5 kPa, between 9.5 and 12.4 kPa, between 12.5 and 14.4 kPa and greater than 14.5 kPa, respectively.

“In this large retrospective cohort, we found that the incidence of HCC in both HCV and NAFLD escalates with increasing transient elastography score, confirming that advanced fibrosis, not just cirrhosis, portends risk,” the study authors wrote. “Further studies validating and further elucidating this relationship between the development of HCC and transient elastography scores would be useful in informing current HCC screening guidelines and in the development of new HCC screening protocols.

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